

# Gravity Worksheet

- 16) Two masses of 10 kilograms and 1 kilogram, respectively are located 1 meter apart. The gravitational force that each mass exerts on the other is \_\_\_\_\_.
- 17) If the gravitational force of attraction of sphere A on sphere B is 2 Newtons, then the gravitational force of attraction of sphere B on sphere A is a) 9 N B) 2 N C) 3 N D) 4 N
- 18) Two objects of fixed mass are moved apart so that they are separated by 3 times their original distance. Compared to the original gravitational force between them, the new gravitational force is a)  $\frac{1}{3}$  as great b)  $\frac{1}{9}$  as great c) 3 times greater d) 9 times greater
- 19) An object has a weight  $W$  at the surface of the Earth. At a distance of 3 Earth radii from the center of the Earth, the weight of the object will be a)  $W/9$  b)  $W/3$  c)  $3W$  d)  $9W$
- 20) The acceleration due to gravity on the moon is  $1/6$  that of Earth. The weight of a 2-kg object on the Moon is \_\_\_\_\_?
- 21) The mass of Mars is about  $6.6 \times 10^{23}$  kg. and the acceleration due to gravity is  $3.7 \text{ m/s}^2$ . What is the weight of a 10 kg object on Mars? What is the radius of Mars?
- 22) A sphere of mass 85 kg is separated from a second sphere of mass (65 kg) by .4 meters. a) What is the gravitational force of attraction? b) What is the acceleration of the first sphere toward second?
- 23) A 150 kg object is launched into orbit at a height of 12,800 km above the Earth's surface. a) What is the weight of the satellite on the surface of the Earth? b) What is the weight of the satellite in orbit? c) What is the speed of the satellite in orbit?